

**REMARKS**

The abstract of the disclosure has been amended as suggested by the Examiner. Claims 1, 10 and 11 have been amended based on the Examples (see, e.g., the disclosure at page 22, lines 13-14 and in the last full sentence on page 23 in the present application). Claim 5 has been amended to make a change mentioned by the Examiner during a telephone call on March 14, 2011.

Entry of the above amendment is respectfully requested.

**Objection to the Abstract of the Disclosure**

On page 2 of the Office Action, the Examiner objects to the abstract of the disclosure for formal reasons and suggests some changes.

In response, Applicant has amended the abstract of the disclosure as suggested by the Examiner. Accordingly, Applicant submits that this objection has been overcome, and withdrawal of this objection is respectfully requested.

**Obviousness Rejection**

On page 3 of the Office Action, claims 1, 3, 4, 7, 8, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al. (EP 1 002 845A2) in view of Satoru Mori (JP 11-189762). On page 6 of the Office Action, claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al. (EP 1 002 845A2) in view of Satoru Mori (JP 11-189762) as applied to claim 1 above, and further in view of Furuya et al. (US 6,150,026).

In response, Applicant notes initially that claim 1 recites “wherein said ultraviolet curable hard coat agent is a polyfunctional ultraviolet curable acrylic compound having three or more functional groups and is selected from the group consisting of acrylates, urethane acrylates and polyester acrylates.”

Also, Applicant note that claim 11 recites “wherein the hard coat layer comprises at least one selected from the group consisting of an ultraviolet curable hard coat agent, wherein said ultraviolet curable hard coat agent is a polyfunctional ultraviolet curable acrylic compound having three or more functional groups and is selected from the group consisting of trimethylol ethane trimethacrylate, trimethylol propane trimethacrylate, pentaerythritol trimethacrylate, pentaerythritol tetramethacrylate, dipentaerythritol pentamethacrylate, dipentaerythritol hexamethacrylate, glycerol trimethacrylate and triallylmethacrylate.”

Thus, a polyfunctional ultraviolet curable acrylic compound having three or more functional groups is used to form the hard coat layer in independent claims 1 and 11 of the present invention.

In the Non-Final Office Action, the Examiner asserts that the substrate of Kondo et al. (EP 1 002 845 A2) is equated to the hard coat layer in the present invention.

However, Kondo et al. ( EP 1 002 845 A2) does not disclose that the substrate is made from a polyfunctional ultraviolet curable acrylic compound having three or more functional groups and that the polyfunctional ultraviolet curable acrylic compound is selected from the group consisting of acrylates, urethane acrylates and polyester acrylates.

Kando et al. ( EP 1002 845 A2) at paragraphs 0038, 0039, 0040, and 0043 discloses that the substrate is generally prepared by curing a resin composition obtained by diluting a photopolymerizable urethane acrylate oligomer with a photopolymerizable monomer.

The photopolymerizable urethane acrylate oligomer of Kondo is a difunctional photopolymerizable urethane acrylate oligomer. That is, the photopolymerizable urethane acrylate oligomer of Kondo does not have three or more functional groups. This is clear from the description of the paragraph 0041 of Kondo. In 0041 of Kondo, the examples of the photopolymerizable urethane acrylate oligomer are described. All of the examples are difunctional photopolymerizable urethane acrylate oligomers.

Further, in the Non-Final Office Action, the Examiner admitted that the photopolymerizable urethane acrylate oligomer of Kondo is a difunctional photopolymerizable urethane acrylate oligomer. In the rejection of claim 10 in the Non-Final Office Action, the Examiner asserted that the photopolymerizable urethane acrylate oligomer in paragraph 0043 of Kondo is a difunctional photopolymerizable urethane acrylate oligomer.

Kondo at paragraph 0040 discloses that the principal component of the resin composition is the difunctional photopolymerizable urethane acrylate oligomer. That is, the difunctional photopolymerizable urethane acrylate oligomer is an essential component.

Further, Kondo at paragraphs 0043 and 0044 discloses that the substrate is generally prepared by curing a resin composition obtained by diluting a photopolymerizable urethane acrylate oligomer with a photopolymerizable monomer, and examples of the photopolymerizable monomer are disclosed in paragraph 0044.

Paragraph 0044 of Kondo discloses that “According to necessity, use may be made of polyfunctional (meth)acrylate.” This means that the polyfunctional (meth)acrylate may be used as the photopolymerizable monomer, because paragraph 0044 of Kondo discloses the examples of the photopolymerizable monomer employed for diluting the urethane acrylate oligomer.

In the Non-Final Office Action, the Examiner asserted “17. It is noted that Kondo at 0044 discloses that ‘According to necessity, use may be made of polyfunctional (meth)acrylate’ in order to form a substrate film (hard coat) of urethane acrylate.” (emphasis added)

However, Applicant submits that the underlined portion of the above sentence indicated by the Examiner is incorrect.

As indicated above, Kondo at paragraph 0044 discloses that the polyfunctional (meth)acrylate may be used as the photopolymerizable monomer employed for diluting the urethane acrylate oligomer. Kondo discloses that the substrate is generally prepared by curing a resin composition obtained by diluting the difunctional photopolymerizable urethane acrylate oligomer with the polyfunctional (meth)acrylate.

In the present invention, the polyfunctional ultraviolet curable acrylic compound having three or more functional groups is used to form the hard coat layer. The hard coat layer of the present invention is not taught or suggested by the difunctional photopolymerizable urethane acrylate oligomer of Kondo.

Thus, Applicant submits that one skilled in the art could not have easily arrived at the claimed invention from Kondo.

Further, Kondo at paragraph 0044 does not disclose that the polyfunctional (meth)acrylate is a polyfunctional (meth)acrylate having three or more functional groups.

Thus, Applicant submits that one skilled in the art could not have easily arrived at the claimed invention from Kondo.

As indicated above, in the Non-Final Office Action, the Examiner asserts that the substrate of Kondo is equated to the hard coat layer in the present invention and the intermediate layer of Kondo is equated to the cured urethane (meth)acrylate layer of the present invention.

However, the hard coat layer of the present invention has a pencil hardness of the surface of the hard coat layer measured according to JIS K5600 of not less than H. On the other hand, the substrate of Kondo is formed by curing the resin composition obtained by diluting the difunctional photopolymerizable urethane acrylate oligomer with the a photopolymerizable monomer. Kondo does not disclose that the substrate of Kondo has a pencil hardness of the surface of the hard coat layer measured according to JIS K5600 of not less than H. Also, Satoru Mori (JP 11-139762) does not disclose that the substrate of Satoru has a pencil hardness of the surface of the hard coat layer measured according to JIS K5600 of not less than H.

Accordingly, Applicant submits that one skilled in the art could not have easily arrived at the claimed invention from Kondo and Satoru.

Further, in view of the purpose of the invention, the substrate of Kondo is not equated to the hard coat layer in the present invention and the intermediate layer of Kondo is not equated to the cured urethane (meth)acrylate layer of the present invention, as indicated in the following.

Kondo at paragraphs 0008 and 0003 discloses the object of the invention. That is, the object of Kondo's invention is to provide a pressure sensitive adhesive sheet which, at the time of working of the back of a semiconductor wafer having a surface whose unevenness height differences are large, for example, 30  $\mu\text{m}$  or more, occasionally greater than 100  $\mu\text{m}$ , is preferably stuck to the adherend surface to thereby protect it during the working, and further, the object of Kondo's invention is to provide a pressure sensitive adhesive sheet which, when the

semiconductor wafer is to be ground to an extremely small thickness, enables performing the grinding at a uniform thickness without the occurrence of dimples.

For this object, Kondo requires that the pressure sensitive adhesive layer exhibits an elastic modulus at 23 °C ranging from  $5.0 \times 10^4$  to  $1.0 \times 10^7$  Pa and that the intermediate layer exhibits an elastic modulus at 23 °C which is not greater than the elastic modulus at 23 °C of the pressure sensitive adhesive layer. This means that the intermediate layer has elasticity but does not have a hard surface. Also, Kondo at paragraph 0033 discloses that the intermediate layer is preferably composed of a material which exhibits a maximum value of  $\tan \delta$  of dynamic viscoelasticity of at least 0.3, especially 0.4 to 2.0, and still especially 0.5 to 1.2, at a temperature ranging from 0 to 60 °C, for achieving the object of Kondo's invention. In addition, Kondo at paragraph 0035 discloses that as the substrate, preferred use is made of films which exhibit a maximum value of  $\tan \delta$  of dynamic viscoelasticity of at least 0.5, especially 0.5 to 2.0, and still especially 0.7 to 1.8, at a temperature ranging from -5 to 80 °C, for achieving the object of Kondo's invention.

As indicated above, the maximum value of  $\tan \delta$  of dynamic viscoelasticity of the intermediate layer is almost the same as the maximum value of  $\tan \delta$  of dynamic viscoelasticity of the substrate.

Accordingly, the substrate also has elasticity but does not have a hard surface.

On the other hand, the pressure sensitive adhesive sheet of the present invention is used for laminating to the surface of an image paper such as a photograph, output by a printer such as a color printer and a display such as LCD (liquid crystal display), PDP (plasma display) and CRT (cathode-ray tube), to protect the surface of displays from dust, stain, flaws, etc. The

pressure sensitive adhesive sheet of the present invention is not used in the grinding of the back face of an adherend.

Therefore, the substrate of Kondo is not equated to the hard coat layer in the present invention.

The substrate of Kondo is formed as the substrate of the pressure sensitive adhesive sheet, but is not formed as the hard coat.

In the present invention, the cured urethane (meth)acrylate layer has a function of the substrate of the pressure sensitive adhesive sheet for protecting a surface. The present specification at the bottom of 1 page to the top of 2 page discloses “As the conventional protecting films, pressure sensitive adhesive sheets for protecting a surface having a hard coat layer on the surface of a transparent plastic film and an adhesive layer on the back surface of the transparent plastic film are proposed (referred to, for example, JP2001-260549A).” Also, the present specification at page 3 discloses “the object can be achieved by forming a structure that a pressure sensitive adhesive layer, a cured urethane (meth)acrylate layer and a hard coat layer are laminated in order, in view of a structure without the stretched substrate film in the state that the pressure sensitive adhesive sheet laminates to the adherend.”

From the above description in the present specification, the cured urethane (meth)acrylate layer of the present invention is formed as the substrate of the pressure sensitive adhesive sheet. That is, it is clear that the cured urethane (meth)acrylate layer of the present invention has a function as the substrate of the pressure sensitive adhesive sheet.

In view of this point, Applicant considers that the substrate of Kondo is equated to the cured urethane (meth)acrylate layer of the present invention. Accordingly, Kondo does not disclose the hard coat layer.

However, the Examiner asserts that the intermediate layer of Kondo is equated to the cured urethane (meth) acrylate layer of the present invention. Applicant submits that the Examiner's assertion is incorrect.

If the Examiner's assertion were correct, this means that the intermediate layer of Kondo has a function as the substrate of the pressure sensitive adhesive sheet.

Satoru discloses that the substrate is formed of urethane acrylate oligomer and a reactive diluent.

Accordingly, it would seem that the Examiner should be asserting that it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the intermediate layer of Kondo with the urethane acrylate oligomer and a reactive diluent.

Accordingly, Applicant submits that one skilled in the art could not have easily arrived at the claimed invention from Kondo and Satoru.

Further, it is submitted that Furuya does not make up for the deficiencies of Kondo and Satoru as discussed above.

Thus, Applicant submits that the present invention is not obvious over the cited art, and withdrawal of these rejections is respectfully requested.

## **Conclusion**

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

AMENDMENT UNDER 37 C.F.R. § 1.111  
Appln. No.: 10/549,668

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Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Bruce E. Kramer  
Registration No. 33,725

SUGHRUE MION, PLLC  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

WASHINGTON OFFICE

**23373**

CUSTOMER NUMBER

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